Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL QUALITY MEASURES CLEARINGHOUSE

General

Title

Sepsis: percent of patients with severe sepsis/septic shock who received Vancomycin (or Linezolid) within 24 hours following severe sepsis/septic shock identification.

Source(s)

VHA, Inc. Transformation of the intensive care unit: sepsis data collection toolkit. Irving (TX): VHA, Inc.; 2007 Jan 1. 29 p.

Measure Domain

Primary Measure Domain

Process

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the Measure Validity page.

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the percent of patients with severe sepsis/septic shock who received Vancomycin (or Linezolid) within 24 hours following severe sepsis/septic shock identification.

Rationale

Studies show that annually there are between 500,000 to one million cases of sepsis and severe sepsis in American hospitals. The annual mortality rate for these cases is between 15 and 30 percent or as many as 200,000 deaths. Many more patients suffer from permanent organ damage. The cost to society in dollars spent and lives lost prematurely is enormous. While there are many useful clinical interventions, research shows that they are applied inconsistently, if at all.

There is emerging evidence that the sickest patients should be treated with broad-spectrum antibiotics as soon as possible. This approach contrasts with treatment for less sick patients where, in general, we start with a narrow-spectrum antibiotic and broaden antibiotics if the patient does not respond.

With critically ill patients (those with severe sepsis or septic shock), clinicians cannot afford to under treat. Evidence suggests that the initial use of inadequate antibiotics nearly doubles the patients' mortality. As a result, the approach to antibiotic management in patients with severe sepsis or septic shock should be to start broad as soon as possible until culture results are available and the regimen can be narrowed.

Just what constitutes adequate broad-spectrum antibiotic coverage is an ongoing controversy. Because pseudomonas is a common pathogen, the initial antibiotic therapy should include a medication against pseudomonas. Increasingly, methicillin-resistant staph aureus (MRSA) is a cause of infection and one of the most common reasons for inadequate antibiotic therapy. In addition, a recent study suggests that 12 percent of MRSA infections were community-acquired and these patients lacked established risk factors. Because our ability to predict who is at risk for pseudomonas and MRSA is imprecise and because a patientâ€™s mortality nearly doubles if infections with these organisms go untreated with the initial antibiotics, we recommend that unless the clinician is confident that the probability of pseudomonas or MRSA is zero, an antibiotic to treat pseudomonas and MRSA should be included in the initial antibiotic therapy for critically ill patients.

The potential downside of this strategy is enhanced antibiotic resistance. Though the data is limited, most experts believe that four days of antibiotics is unlikely to cause resistance. Resistance ensues when the drugs are continued for long periods of time. Among critically ill patients, the risk-benefit ratio thus strongly favors starting broad-spectrum antibiotics that includes anti-pseudomonal and MRSA drugs. These antibiotics should be discontinued if not needed when culture results are available.

Primary Clinical Component

Severe sepsis; septic shock; Vancomycin (or Linezolid) administration

Denominator Description

Total number of patients, 16 years of age and older, with a diagnosis of severe sepsis/septic shock (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Number of patients who received Vancomycin (or Linezolid) within 24 hours prior to and 24 hours following severe sepsis/septic shock identification (see the related "Numerator Inclusions/Exclusions" field)

Evidence Supporting the Measure

Evidence Supporting the Criterion of Quality

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Evidence Supporting Need for the Measure

Need for the Measure

Unspecified

State of Use of the Measure

State of Use

Current routine use

Current Use

Collaborative inter-organizational quality improvement

Internal quality improvement

Quality of care research

Application of Measure in its Current Use

Care Setting

Hospitals

Professionals Responsible for Health Care

Advanced Practice Nurses

Nurses

Physicians

Lowest Level of Health Care Delivery Addressed

Single Health Care Delivery Organizations

Target Population Age

Age greater than or equal to 16 years

Target Population Gender

Either male or female

Stratification by Vulnerable Populations

Unspecified

Characteristics of the Primary Clinical Component

Incidence/Prevalence

See the "Rationale" field.

Association with Vulnerable Populations

Unspecified

Burden of Illness

See the "Rationale" field.

Utilization

Unspecified

Costs

A study confirmed that patients with severe sepsis consume significant resources. The average hospital length of stay was 20 days at an average cost of $22,100. National cost estimates for the care of severe sepsis based on this study is $16.7 billion dollars, with the care of patients older than 65 costing $8.7 billion (52.3 percent), and care of those older than 75 costs $5.1 billion dollars (30.8 percent). The costs for caring for patients with sepsis are projected to rise approximately 1.5 percent per year due to the aging U.S. population.

Evidence for Costs

VHA, Inc. Improving sepsis care in the intensive care unit: an evidence-based approach. Irving (TX): VHA, Inc.; 2004. 60 p.

Institute of Medicine (IOM) Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding

Users of care only

Description of Case Finding

Patients, 16 years of age and older, with a diagnosis of severe sepsis/septic shock

Denominator Sampling Frame

Patients associated with provider

Denominator Inclusions/Exclusions

Inclusions
Total number of patients, 16 years of age and older, with a diagnosis of severe sepsis/septic shock

Exclusions
Any one of the following:

- Patients less than 16 years of age
- Patients with renal failure
- Not Applicable because:
  - An organism (other than methicillin-resistant Staphylococcus aureus [MRSA] or methicillin-resistant Staphylococcus epidermidis [MRSE]) responsible for sepsis has been identified
  - Patient had severe allergies to Vancomycin and Linezolid
  - Had contraindications/reasons for not receiving Vancomycin and Linezolid
  - Was diagnosed with secondary bacterial peritonitis
  - Care was withdrawn or patient expired within 24 hours following severe sepsis/septic shock identification
- Date or Time of severe sepsis/septic shock identification unknown
- Cases with a time elapsed EARLIER THAN -24 hours or GREATER THAN +72 hours. Time elapsed is the difference between severe sepsis/septic shock identification and the administration of Vancomycin (or Linezolid).

Note: Refer to original measure documentation for definitions and additional details.

Relationship of Denominator to Numerator

All cases in the denominator are equally eligible to appear in the numerator

Denominator (Index) Event

Clinical Condition

Institutionalization

Denominator Time Window

Time window brackets index event

Numerator Inclusions/Exclusions

Inclusions
Number of patients who received Vancomycin (or Linezolid) within 24 hours prior to and 24 hours following severe sepsis/septic shock identification

Exclusions
Any one of the following:

- Date or Time of Vancomycin (or Linezolid) administration unknown
- "Not Administered" was selected for Vancomycin (or Linezolid) administration

Measure Results Under Control of Health Care Professionals, Organizations and/or Policymakers

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

Numerator Time Window

Fixed time period

Data Source

Medical record

Level of Determination of Quality

Individual Case

Pre-existing Instrument Used

Unspecified

Computation of the Measure

Scoring

Rate

Interpretation of Score

Better quality is associated with a higher score

Allowance for Patient Factors

Unspecified

Standard of Comparison

Internal time comparison

Evaluation of Measure Properties

Extent of Measure Testing

Unspecified

Identifying Information

Original Title

Vancomycin (or Linezolid) received within 24 hours following severe sepsis/septic shock identification.

Measure Collection Name

Transformation of the Intensive Care Unit (TICU) Measures

Measure Set Name

Sepsis Quality Indicators

Submitter

Vizient, Inc. - For Profit Organization

Developer

Vizient, Inc. - For Profit Organization

Funding Source(s)

VHA, Inc.

Composition of the Group that Developed the Measure

Internal VHA, Inc. clinical subject matter experts along with external clinical subject matter faculty experts from various National and local research medical centers/hospitals

Financial Disclosures/Other Potential Conflicts of Interest

None; work was not supported by any third party vendors, contractors or for-profit health care companies including suppliers, device makers, or pharmaceutical firms.

Adaptation

Measure was not adapted from another source.

Release Date

2004 Jan

Revision Date

2007 Jan

Measure Status

This is the current release of the measure.

The VHA, Inc. reaffirmed the currency of this measure in October 2010.

Source(s)

VHA, Inc. Transformation of the intensive care unit: sepsis data collection toolkit. Irving (TX): VHA, Inc.; 2007 Jan 1. 29 p.

Measure Availability

The individual measure, "Vancomycin (or Linezolid) Received within 24 Hours Following Severe Sepsis/Septic Shock Identification," is published in "Transformation of the Intensive Care Unit: Sepsis Data Collection Toolkit."

For more information, contact VHA, Inc. at: 220 E. Las Colinas Blvd., Irving, TX 75039; Phone: 1-800-842-5146 or 1-972-830-0626; Web site: www.vha.com .

Companion Documents

The following is available:

> VHA, Inc. Improving Sepsis Care in the Intensive Care Unit: An Evidence-Based Approach. Irving (TX): VHA, Inc.; 2004. 60 p.

For more information, contact VHA, Inc. at: 220 E. Las Colinas Blvd., Irving, TX 75039; Phone: 1-800-842-5146 or 1-972-830-0626; Web site: www.vha.com .

NQMC Status

This NQMC summary was completed by ECRI Institute on September 23, 2008. The information was verified by the measure developer on November 13, 2008. The information was reaffirmed by the measure developer on October 15, 2010.

Copyright Statement

Disclaimer

NQMC Disclaimer

The National Quality Measures Clearinghouseâ„¢ (NQMC) does not develop, produce, approve, or endorse the measures represented on this site.

All measures summarized by NQMC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public and private organizations, other government agencies, health care organizations or plans, individuals, and similar entities.

Measures represented on the NQMC Web site are submitted by measure developers, and are screened solely to determine that they meet the NQMC Inclusion Criteria.

NQMC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or its reliability and/or validity of the quality measures and related materials represented on this site. Moreover, the views and opinions of developers or authors of measures represented on this site do not necessarily state or reflect those of NQMC, AHRQ, or its contractor, ECRI Institute, and inclusion or hosting of measures in NQMC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding measure content are directed to contact the measure developer.